

ABSTRACT

A microfluidic device having durable ultraphobic fluid contact surfaces in the fluid flow channels of the device. The ultraphobic surface generally includes a substrate portion with a multiplicity of projecting regularly shaped microscale or nanoscale asperities disposed in a regular array so that the surface has a predetermined contact line density equal to or greater than a critical contact line density, and so that the ratio of the cross-sectional dimension of the asperities to the spacing dimension of the asperities is less than or equal to 0.1.